

Chapter 3 Physical Environment

3.1 WATER QUALITY AND STORM WATER RUNOFF

3.1.1 Regulatory Setting

Section 401 of the Clean Water Act (CWA) requires water quality certification from the State Water Resources Control Board (SWRCB) or from a Regional Water Quality Control Board (RWQCB) when the project requires a CWA Section 404 permit. Section 404 of the CWA requires a permit from the US Army Corps of Engineers (Corps) to discharge dredged or fill material into waters of the United States.

Along with CWA Section 401, CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutant into waters of the United States. The federal Environmental Protection Agency has delegated administration of the NPDES program to the SWRCB and nine RWQCBs. The SWRCB and RWQCB also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

The SWRCB has developed and issued a statewide NPDES permit to regulate storm water discharges from all Department activities on its highways and facilities. Department construction projects are regulated under the Statewide permit, and projects performed by other entities on Department right-of-way (encroachments) are regulated by the SWRCB's Statewide General Construction Permit. All construction projects over 1 acre require a Storm Water Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction. Department activities less than 1 acre require a Water Pollution Control Program.

3.1.2 Project Location and Receiving Water Bodies and Groundwater

The project is located within the North Coast Regional Water Control Board (RWQCB) jurisdiction (Region 1). Work may include replacing and/or extending the existing 36 cross-culverts (not including the three bridge/culverts at creek crossings). The eventual receiving body of water from the project area is the Laguna de Santa Rosa, which is on the EPA's 303(d) list of impaired waterbodies for ammonia, low dissolved oxygen, nitrogen, phosphorus, temperature, and sedimentation/siltation. The Laguna de Santa Rosa drains to the Russian River, and also serves as an overflow reservoir for the Russian River during flood conditions (see Figure 3-1).

The receiving groundwater basin is the Sonoma Valley Groundwater Basin. The Russian River, through collectors and reservoir projects administered by the Sonoma County Water Agency, is the main source of water for agriculture, municipal and industrial uses in the Russian River watershed, which includes the project area.

3.1.3 Water Quality Impacts

Caltrans has performed many studies to monitor and characterize highway storm water runoff throughout the State. Pollutants of Concern in Caltrans runoff are phosphorus, nitrogen, copper (total or dissolved), lead (total or dissolved), zinc (total or dissolved), sediments, general metals (unspecified metals), and litter. Some sources of these pollutants are natural erosion, phosphorus from tree leaves, combustion products from fossil fuels, trash and falling debris from motorists, and the wearing of brake pads.

The proposed project's total soil disturbance is approximately 12.5 hectares (30.9 acres). About seven acres of new impervious surface (pavement) will be added which will slightly increase roadway runoff. Groundwater should be anticipated where construction occurs at creek locations.

3.1.4 Avoidance, Minimization and/or Mitigation Measures

Where groundwater is encountered, early discussion will be initiated regarding the handling and disposal of groundwater water during construction.

The project will incorporate standard Caltrans Best Management Practices (BMPs) for the control and treatment of runoff, including those required by Caltrans's NPDES permit and Construction General Permit, and provisions which may be specified by regulatory agencies as conditions of their permits and certifications. A 401 Water Quality Certification from Region 1 RWQCB is anticipated. In accordance with the Caltrans NPDES permit and the Construction General Permit, BMPs will be incorporated to reduce the discharge of pollutants during construction as well as permanently to the Maximum Extent Practicable. Final determination of BMPs will be made during project design.

3.1.4.1 Construction Site BMPs

Construction Site BMPs are implemented during construction activities to reduce pollutants in storm water discharges throughout construction and will be incorporated into a Storm Water Pollution Prevention Plan (SWPPP). These may include temporary silt fence, stockpile cover, stabilized construction entrance/exit and temporary soil stabilizers. Grading of existing slopes will be required.

3.1.4.2 Permanent Design Pollution Prevention BMPs

Design Pollution Prevention BMPs, permanent measures to improve storm water quality by reducing erosion, stabilizing disturbed soil areas, and maximizing vegetated surfaces, will be determined during the design phase. These may include erosion control measures, methods to reduce runoff velocity, and source controls to reduce the volume of runoff generated on-site and eliminate opportunities for pollutants to enter the drainage system.

3.1.4.3 Permanent Treatment BMPs

Treatment BMPs are permanent devices and facilities treating storm water runoff. Caltrans approved Treatment BMPs are Biofiltration Swales, Infiltration Basins, Detention Basins, Traction Sand Traps, Dry Weather Flow Diversions, Media Filters, Gross Solids Removal Devices (GSRDs), Multi-chamber Treatment Trains, and Wet Basins. This project will consider permanent treatment BMPs during the design phase.

3.2 GEOLOGY / SOILS / SEISMIC / TOPOGRAPHY

3.2.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.” Topographic and geologic features are also protected under the California Environmental Quality Act.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Department’s Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE), from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

3.2.2 Environmental Consequences

3.2.2.1 Seismic Activity

The project does not cross a fault mapped on Alquist-Priolo maps. The likelihood of ground rupture on an unmapped fault is very low.

3.2.2.2 Ground shaking

There have been no historical earthquakes attributed to the Rodgers Creek fault, the closest major fault to the project site. However, large historical earthquakes such as the 1906 Great San Francisco Earthquake may have produced shaking at the site, and numerous small earthquakes have occurred in Sonoma County. Since there are no structures along the project alignment, the project does not increase risk to the public above the current level.

3.2.2.3 Seismic-related ground failure, including liquefaction

This project will not increase the risk to the public from seismic-related ground failure or liquefaction.

3.2.2.4 Soils and soil movement

The project is a widening/straightening project that does not require extensive grading. The project will not result in substantial soil erosion or loss of topsoil. The project alignment lies on relatively flat ground with no landslide hazard.

3.3 HAZARDOUS WASTE/MATERIALS

3.3.1 Regulatory Setting

Many state and federal laws regulate hazardous materials and hazardous wastes. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health and land use.

The primary federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. RCRA provides for “cradle to grave” regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

3.3.2 Affected Environment

Caltrans conducted studies to evaluate the potential for hazardous wastes to be present in the project area. Certain land uses tend to be correlated with the presence of environmental contamination. By consulting records of land use, Caltrans identified current and previous locations of those land uses. Caltrans took samples of soil and groundwater in a variety of locations and analyzed them for the presence of contaminants.

Soil samples collected at several locations in the project area displayed elevated levels of lead. However, the lead concentrations are not high enough to require the soil to be considered hazardous waste. The source for the lead is not known; however, it is thought to be related to accumulation of dust and debris containing lead from leaded gasoline emissions.

Caltrans also identified specific locations for groundwater investigations, including the locations of former gas stations. Groundwater samples from three sites contained petroleum hydrocarbons.

- Abandoned building, northwest corner of SR-116 and Stoney Point Road, 7175 Gravenstein Highway
- Landers Automotive, 3610 Gravenstein Highway
- Hessel Garage, 3880 Gravenstein Highway

Previously reported initial site assessment work involving hazardous waste sites under the scope of work for this project additionally include the following sites:

- Bill's Deli, 3705 South Gravenstein Highway
- Claremont Energy, 5216 South Gravenstein Highway (site file officially closed by regulatory agency).

3.3.3 Impacts

The potential for hazardous substances to affect human health or the environment is very low. The most likely locations for contamination in the project area have been identified and tested. The existing regulations covering hazardous waste management are effective at preventing exposure to hazardous wastes, by the public, by the environment, or by workers.

The project is not expected to disturb contaminated groundwater. At the locations where contamination has been identified, project activities are close to the surface and will not reach below the groundwater table.

3.3.4 Avoidance, Minimization and/or Mitigation Measures

Suspected hazardous material contamination, and concentrations, that could be encountered during construction include fuel hydrocarbons, i.e., gasoline and diesel fuel, waste oil, chlorinated solvents, and unidentified high levels of aerially deposited lead. In the event of the discovery of previously unidentified hazardous materials, the characteristics and extent of the materials would be identified through site characterization. Depending on these results, the project design could be

amended to avoid the contamination. The construction contractor would be instructed to comply with all applicable regulations.

3.4 BIOLOGY, INCLUDING WETLANDS

3.4.1 Regulatory Setting

This section covers the following biological areas: wetlands and other waters, plant species, animal species, threatened or endangered species, natural communities, and invasive species. A summary of regulatory requirements relative to each area follows.

3.4.1.1 Wetlands and Waters of the US

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

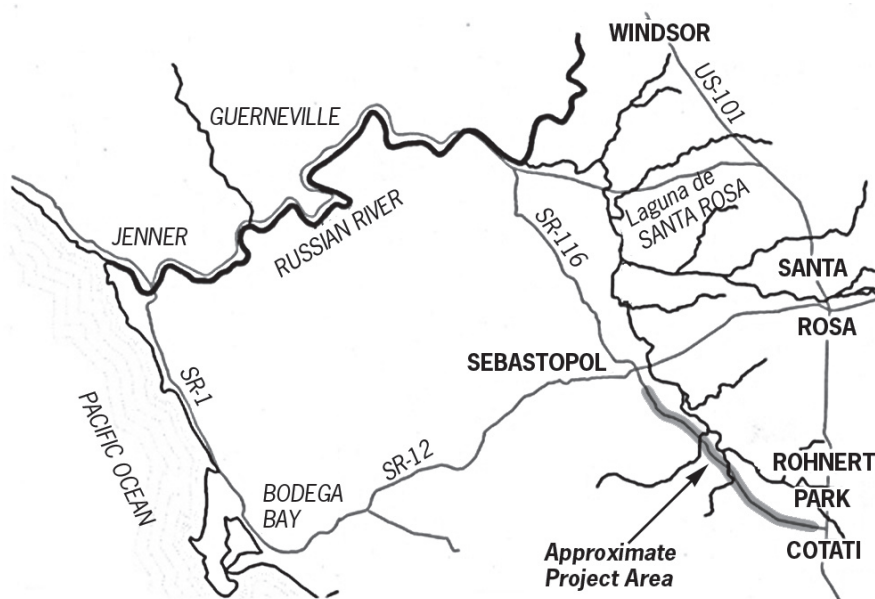


Figure 3-1. Russian River Watershed
Courtesy City of Santa Rosa, Dept. of Public Works

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the US Army Corps of Engineers (USACE) with oversight by the Environmental Protection Agency (EPA).

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the Department of Fish and Game (CDFG) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction. If CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section for additional details.

3.4.1.2 Individual Species

Many state and federal laws regulate impacts to wildlife. The US Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Game (CDFG) are responsible for implementing these laws. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection.

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et. seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et. seq. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

3.4.1.3 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors, fish passage, and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Where a project involves threatened or endangered species, the Federal Endangered Species Act (FESA) and CESA require consideration of the biological communities where they exist as well. Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed above in the Threatened and Endangered Species section 3.4.3, Special-Status Species and Occurrences. Wetlands and other waters are discussed elsewhere in this section.

California Senate Concurrent Resolution 17 is legislation that requests State agencies to preserve and protect native oak woodlands to the maximum extent feasible or provide replacement plantings where designated oak species are removed from oak woodlands.

Restoration of California's anadromous fish populations is mandated by the Salmon, Steelhead Trout, and Anadromous Fisheries Program Act of 1988 (California Fish and Game Code §6900-6903.5) which states that it is a policy of the State that existing natural salmon and steelhead trout habitat shall not be diminished further without offsetting the impacts of the lost habitat.

3.4.1.4 Invasive Species

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999 directs the use of the state's noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

Caltrans does not use any of the species on the California list of noxious weeds for erosion control or landscaping and employs practices to minimize dispersal of noxious weeds into uninfested areas.

3.4.2 Natural Communities

3.4.2.1 Affected Environment

The project Biological Study Area (BSA) includes the ecological region in which the SR 116 corridor is located. The BSA includes a broad northwest-southeast oriented valley, characterized by high biological diversity associated with vernal pools and grassland habitats of the Coastal Plain-Santa Rosa Plain and the Laguna de Santa Rosa. The region is referred to as the Santa Rosa

Plain. This is different from and much larger than the Environmental Study Limit (ESL), where specific resources immediately within or adjacent to the project were surveyed and/or mapped.

The project is located on the southwestern boundary of the Santa Rosa Plain. Historically this area was characterized by a mosaic of oak and riparian woodlands and wetlands. The distribution of these natural communities and habitats has been significantly reduced, and much of the remaining area has been reduced in quality as a result of agriculture, rural residential development and business development. Currently, plant cover in non-landscaped or orchard areas generally consists of annual grasses, forbs, and a few scattered oaks.

The topography is gently undulating with minor variations in elevation. The Laguna de Santa Rosa drains to the Russian River, and also serves as an overflow reservoir for the Russian River during flood conditions (see Figure 3-1). Five perennial drainages cross under SR-116 within the project boundaries, including Jersey Creek, Blucher Creek, an unnamed tributary to Laguna de Santa Rosa, Gossage Creek, and Washoe Creek. Gossage Creek is not impacted by project activities and will not be included in further discussion of creeks.

The creeks generally flow in an eastward direction toward the Laguna de Santa Rosa. All four creeks pass under SR-116 through large box culverts. Creeks within the project's ESL support adjacent riparian vegetation of varying widths, or canopy cover.

The local environment supports a variety of habitats that are essential for the dispersal, refuge, breeding, and foraging activities of wildlife species, and the riparian areas likely facilitate localized wildlife movement. Common wildlife include: black-tailed (mule) deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), small rodents, and numerous waterfowl, raptor, songbird, lizard, and snake species. Opportunities for wildlife to cross SR-116 or through the developed areas in the ESL are limited.

Climate in this area is typical of northern California's Mediterranean type climate with warm summers and comparatively warm, wet winters. The average annual air temperature is 14°C to 17°C (58°F to 62°F), the average frost-free period is 220 to 260 days, and the average annual rainfall is 61.0 to 76.2 centimeters (24 to 30 inches). Brief periods of flooding can occur from December through April.

3.4.2.1.1 Vegetation

The following vegetation communities of biological importance are represented within the project area.

- Remnants of valley oak woodland, which is dominated by widely spaced valley oaks (*Quercus lobata*) with an understory of native and non-native annual and perennial grasses and forbs, occur on several large parcels on the north side of SR-116 between Stony Point Road and Highway 101.
- North coast riparian forest, a tree-dominated wetland vegetation type found on stream banks, is found along Blucher Creek and near several unnamed small intermittent drainages. It is

composed of dense stands of tall deciduous and evergreen trees that form a closed canopy, usually near or equal to 100 percent cover.

- Wet roadside ditches are found throughout the project's ESL. These ditches appear to be features constructed for the purpose of channeling water away from SR-116. Most ditch sections are deep enough to carry and hold water throughout the wet season and well into the spring. Although they are artificial landscape features, they have been in place long enough to have been colonized by some native wetland plants, as well as non-native aquatic and stream bank weeds, such as Himalayan blackberry (*Rubus discolor*).
- Seasonal wetlands include seasonally inundated pools and swales that often occur with annual grassland habitat. The ESL contains approximately 0.329 ha (0.812 acres) of seasonal wetlands and Northern vernal pools. Northern vernal pool is a vegetation community characterized by distinctive flora that is composed mainly of native annual forbs. Most of these vernal pool indicator species within the ESL are endemic to California, and a few are restricted entirely or mainly to the Santa Rosa Plain.
- Perennial creeks are an aquatic community characterized by year-round, open water habitat. There are five perennial creeks within the extent of the ESL. Perennial creeks and other features with year-round surface water represent important habitat for a number of common wildlife species. Creeks within the ESL provide habitat for breeding and larval development of fish and amphibians. The perennial creeks in the ESL may also provide foraging habitat for common and special-status bat species.
- Annual grassland consisting of a dense to sparse cover of introduced annual grasses, dominated by introduced species and native forbs, was observed on a few parcels where the predominant land uses appeared to be livestock grazing and open space.

3.4.2.1.2 Wetlands and Waters of the US

Five creeks are within the project limits, all of which flow into the Laguna de Santa Rosa, a wetland complex that drains a watershed encompassing most of the Santa Rosa Plain, which in turn drains to the Russian River (see figure 3-1). These are Jersey Creek, Blucher, the unnamed creek located near Llano Road, Washoe Creek, and Gossage Creek. Because this project will affect all of the above except Gossage Creek within the bed and banks, a Streambed Alteration Agreement from CDFG will also be required. USACE will assess jurisdictional determinations upon consultation.

There are 0.94 hectares (2.33 acres) of potentially jurisdictional wetlands within the ESL. These features range in size from less than 0.001 hectares to 0.04 hectares (0.002 acres to 0.01 acres). Potentially jurisdictional wetlands within the ESL include seasonal wetlands (including northern vernal pool), riparian wetlands (including north coast riparian forest), and roadside ditches. The ESL contains approximately 0.82 hectares (2.02 acres) of potentially jurisdictional waters of the US, of which 0.70 hectares (1.73 acres) are perennial creek and 0.12 hectares (0.29 acres) are within roadside ditches.

3.4.2.2 Impacts

3.4.2.2.1 General

The proposed project is predicted to affect many different biological resources. Because protective measures have been identified for specific resources, discussion of impacts to each resource is followed by a discussion of avoidance, minimization and/or mitigation measures.

3.4.2.2.2 Vegetation

Oak trees, including an estimated 94 valley oaks, 36 coast live oak (*Quercus agrifolia*), and 17 black oaks (*Quercus kelloggii*) within the cut and fill line will be removed. Caltrans's preliminary estimate of the number of oak trees that will be removed is 151. An additional 345 oak trees are close to anticipated construction activities and might be trimmed, or in a few cases, removed. Besides oaks, there are about 550 trees of other species in the same area, close to construction activities. Individual trees may be trimmed or even removed. Representative species include coastal redwood (*Sequoia sempervirens*), Fremont cottonwood (*Populus fremontii*), black walnut (*Juglans californica*) and sycamore (*Platanus* sp.).

Impacts to riparian vegetation within the ESL will total 0.29 hectares (0.72 acres) of permanent impacts and 0.43 hectares (1.07 acres) of temporary impacts. Temporary disturbance and permanent loss of annual grassland habitat in the ESL would occur during construction of the proposed project.

3.4.2.2.3 Wetlands and Waters of the US

Construction of the proposed project would result in impacts including the temporary disturbance or permanent loss of jurisdictional wetlands (seasonal wetlands, riparian wetlands and roadside ditches) as a result of direct removal, filling, hydrological interruption, alteration of bed and bank, and other construction-related activities. Table 3-1 quantifies the anticipated impacts to wetlands within the ESL.

Table 3-1 Summary of Impacts to Waters of the US within the ESL	Hectares (acres)
Total Permanent Direct Impacts to Perennial Creeks	0.008 (0.021)
Total Temporary Direct Impacts to Perennial Creeks	0.012 (0.030)
Total Permanent Direct Impacts to Roadside Ditches	0.040 (0.099)
Total Temporary Direct Impacts to Roadside Ditches	0.006 (0.015)

All 0.05 hectares (0.12 acres) of potentially jurisdictional waters of the United States within roadside ditches in the ESL would be temporarily impacted during construction. A minor amount (< 0.08 hectares [0.20 acres]) of potentially jurisdictional waters of the United States within perennial creeks would be impacted by the proposed project.

3.4.2.3 Minimization, Avoidance, and/or Mitigation Measures

3.4.2.3.1 Vegetation

Native oaks will be used to the extent practicable in replacement plantings, although the space available for tree planting is expected to be limited. Oak trees not intended for removal but accidentally killed by trimming will be replaced. To avoid disturbance to individual oak trees within and adjacent to the right-of-way, Caltrans will install exclusionary fencing around the drip line of any such oak tree that will not be trimmed or removed during construction activities and is greater than 10 inches in diameter at breast height. The drip line is the outer perimeter of the existing canopy where condensation, fog and/or rain fall. In disturbed grassland areas, Caltrans will reseed/replant.

3.4.2.3.2 Wetlands and Waters of the US

Environmentally Sensitive Area (ESA) fencing will be placed along the edge of existing pavement to prevent construction activities beyond this area for approximately 0.8 kilometers (0.5 mi) near Gossage Creek. All unpaved areas in this portion would not be disturbed during proposed project activities.

Caltrans will compensate for temporary and permanent impacts to wetlands through a combination of onsite restoration/creation, off-site restoration, and purchase of wetland-restoration credits from an approved mitigation bank. Roadside ditches will be relocated, in-kind within the ESL. Caltrans will also prepare a plan for monitoring and minimizing the effects of the proposed project.

To ensure no net loss of habitat functions and values, Caltrans will compensate for waters of the United States that are filled or disturbed as part of the proposed project through a combination of onsite restoration/creation, off-site restoration, or purchase of mitigation credits. Roadside ditches will be relocated, in-kind, within the ESL.

3.4.3 Special-Status Species and Occurrences

Special-status species are plants or animals that have been officially designated as threatened or endangered, or otherwise require special consideration. These special considerations include protection of critical habitat and protection of migratory birds. The table in Appendix B summarizes the sensitive plant and animal species listed by the CDFG and US Fish and Wildlife Service (USFWS) as having the potential to be found in the project region. Several areas of the project site provide potential and suitable habitat for the California Tiger Salamander (CTS), the California Freshwater Shrimp (CFWS), and rare plants, for which project effects are expected to trigger regulatory review.

The Federal Endangered Species Act provides the federal program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The US Fish and Wildlife Service of the Department of the Interior maintain the list of species. The primary State law protecting threatened or endangered species is the California Endangered Species Act (CESA), which is administered by the CDFG. CESA requires project sponsors (ie; Caltrans) to implement

measures to prevent intentional or unintentional loss of threatened or endangered species. The California Fish and Game Code contains further state laws and regulations pertaining to wildlife. USFWS, the National Marine Fisheries Service (NOAA Fisheries) and the CDFG are responsible for implementing these laws. Caltrans projects are also subject to the Native Plant Protection Act.

3.4.3.1 Discussion of the California Tiger Salamander (*Ambystoma californiense*)

3.4.3.1.1 Status

The Sonoma County population of CTS has been listed as endangered since August 19, 2005, having previously been downlisted to threatened status. The Santa Rosa Plain Conservation Strategy (SRPCS) designates conservation areas within the Santa Rosa Plain to ensure that preservation occurs throughout the distribution of the species. The existing roadway within the project area traverses the Northwest Cotati Conservation Area, which is designated in the SRPCS plan as essential to recover the species. The USFWS has decided against designating critical habitat for CTS within the SRPCS area.

3.4.3.1.2 Natural History

CTS inhabit grasslands and open oak woodlands in central and northern California. The primary cause of the decline of CTS is the loss and fragmentation of habitat from human activities and the spread of nonnative predators. CTS require two major habitat components: aquatic breeding sites and nearby terrestrial (upland) sites for refuge or for spending the summer in a dormant state (aestivation). CTS therefore require large contiguous areas of vernal pools or comparable aquatic breeding habitat containing multiple breeding ponds to ensure recolonization of individual ponds.

3.4.3.1.3 Survey Results

Biologists conducted field surveys of the project area to look for the types of habitat that CTS prefer. Potential CTS habitat within the project ESL includes potential breeding habitat and potential upland habitat. Some of the roadside ditches within the ESL represent potential breeding habitat for CTS in lieu of ponds or vernal pools. Suitable upland aestivation and dispersal habitat contiguous with the SR-116 ESL occurs in the form of open grassland habitat within the dispersal distance of breeding ponds. Upland habitat is fragmented considerably in some areas by development.

3.4.3.1.4 Impacts

The project is likely to adversely effect the CTS and/or its habitat. Within the ESL, approximately 2.70 hectares (6.68 acres) of potential CTS habitat will be affected. Temporary effects of 2.48 hectares (6.14 acres) will be associated with construction vehicle traffic, vehicle parking, and construction staging. Permanent habitat loss of 0.22 hectares (0.54 acres) will be limited to the area between the existing edge of pavement and the edge of the area to be graded.

3.4.3.1.5 Minimization, Avoidance and/or Mitigation Measures

Throughout the project limits, Caltrans proposes to create a new right-of-way that will provide a work and staging area beyond the cut and fill line of up to 5.0 meters (16 feet) in width for the construction crews. In locations where CTS habitat occurred, and it was feasible to reduce the work area, the construction work area has been reduced to 3.0 meters (10 feet) in width.

Grading and paving to accommodate standard lanes and shoulders requires engineers to develop a project footprint that includes a slope extending from the area from the edge of the new pavement out to where the slope meets native substrate. The California State Highway Design Manual mandates a 4:1 ratio for this slope. In order to reduce the amount or total area of permanent effects in CTS habitat, Caltrans design engineers have applied for design exceptions that allow a reduction from the standard 4:1 slope to a 2:1 slope or a 1:1 slope where possible. In some cases, a retaining wall may be used to remove any slope. The project will also incorporate all appropriate avoidance and minimization measures in the SRPCS relevant to the CTS. Details on these measures may be found at http://www.fws.gov/sacramento/es/santa_rosa_conservation.html.

The area affected for linear projects consists of the land disturbed by the construction operation (according to the SRPCS). Therefore, the project will compensate for all lands that are affected equally, regardless of whether the effects will be temporary or permanent.

The proposed project will purchase up to 3.29 ha (8.12 acres) of CTS habitat at an approved mitigation bank for potential adverse impacts on CTS w/in 2.1 km (1.3 mi) from a known breeding site. In areas located more than 2.1 km (1.3 mi) from a known breeding site, but within areas the SRPCS designates as “Potential for Presence of CTS,” Caltrans proposes to purchase 0.11 ha (0.28 acres) from an approved bank. Alternatively, Caltrans may contribute \$12,187.25 to an existing species fund for CTS. Caltrans is proposing either to purchase this land at a recognized Santa Rosa Plain habitat bank, or through purchase and conservation of suitable habitat as approved by USFWS.

3.4.3.2 Discussion of the California Freshwater Shrimp (*Syncaris pacifica*)

3.4.3.2.1 Status

The CFWS was petitioned for listing as an endangered species under the authority of the FESA in 1988. The recovery plan for the species released in July 1998 declined to designate critical habitat for the CFWS.

3.4.3.2.2 Natural History

The CFWS is the only native stream-dwelling shrimp found in California. Populations of CFWS currently are only known to occur in 17 streams in Marin, Napa, and Sonoma Counties. The shrimp are found in lowland perennial streams or pools less than 116 meters (380 feet) in elevation with less than one percent stream gradient, with exposed live roots along submerged undercut banks having overhanging vegetation and vines. Existing populations of CFWS are threatened by introduced fish, and by deterioration or loss of habitat resulting from diversion of water, impoundments,

livestock and dairy activities, agricultural activities and developments, flood control activities, gravel mining, timber harvesting, migration barriers, summer dams, and water pollution.

3.4.3.2.3 Survey Results

A Caltrans-contracted and USFWS-approved biologist conducted a habitat assessment along all drainages in the project area on two separate dates in October 2005. Washoe Creek and the unnamed tributary exhibited mainly poor quality habitat, with some patches of habitat considered to be of “fair” quality. “Excellent” quality habitat was observed on the north side of Jersey Creek. CFWS were not observed in this location. No shrimp were found in Washoe Creek, Jersey Creek, or the unnamed tributary, and the biologist concluded that the proposed project is unlikely to have an adverse effect on this species in these areas.

A total of eight individual CFWS were found in Blucher Creek. The CFWS were found in a pool located approximately 12 meters (40 feet) upstream of SR-116 crossing on the south side of the highway. The habitat in Blucher Creek upstream of SR-116 was characterized as “good” quality and included blackberry roots and willow trees (*Salix* sp.) overhanging the stream channel. No shrimp were found downstream of the bridge, although the biologist observed the habitat to be “good to excellent” habitat.

3.4.3.2.4 Impacts

The proposed project would include replacement of the existing triple box culvert at Blucher Creek with a clear-span bridge that will allow vertical movement of the streambed and promote species connectivity on both sides of the existing highway. The pool in which the CFWS was found is not anticipated to be damaged. Construction of the proposed project will result in temporary effects to Blucher Creek associated with gaining access to the existing box culvert, construction of a new free-span bridge, and placement of rock slope protection.

The removal of the box culvert and replacement of that structure and replacement with a free-span bridge structure will facilitate the development of natural stream banks and vegetation in areas that are currently concrete-lined. Although the project would result in temporary effects to the riparian vegetation and the area immediately adjacent to the roadway, the long-term benefits include removal of concrete fill and materials that prevent vegetation from colonizing the area and establishing suitable habitat for CFWS.

Approximately 646 square meters (m²) (6,950 square feet [ft²]) of Blucher Creek would be affected during project construction. Permanent project effects would be 209 m² (2,250 ft²) and limited to the new bridge footings and the proposed wing wall designed to facilitate formation of suitable CFWS habitat. Temporary effects would be 437 m² (4,700 ft²) and include all project activities that would occur within the proposed right-of-way. The construction boundaries are the minimum amount required to construct the clear-span bridge.

Although the proposed project would result in temporary effects to the CFWS’s suitable habitat in Blucher Creek, the overall effect of the proposed project may be beneficial.

3.4.3.2.5 *Minimization, Avoidance and/or Mitigation Measures*

Caltrans hydrologists will develop a design feature to mimic the original hydrologic dynamics produced and therefore maintain the pool upstream of SR-116 where CFWS were found. The specific design of the in-stream feature would be subject to the approval of the USFWS and the CDFG and the regulatory agencies with jurisdiction over the creek channel.

At the close of construction, Caltrans will restore vegetated slopes with non-invasive vegetation and monitor the restored vegetation. In addition, Caltrans will implement a construction window of June 15 to October 15 to avoid and minimize effects to the CFWS and its habitat. Details of restoration and minimization measures may be found in the *Biological Assessment for California Freshwater Shrimp* (*Syncaris pacifica*), *California Tiger Salamander* (*Ambystoma californiense*), and *Endangered Plants, Sonoma State Route 116 Roadway Rehabilitation Project Between Cotati and Sebastopol Sonoma County, California*, available for viewing at the Caltrans District 04 office (see Appendix E).

Project work at Blucher Creek will be increasing the natural habitat conditions by installing a clear span bridge to replace a box culvert. Because of the long-term beneficial effects anticipated from the action itself, no additional compensation is proposed.

3.4.3.3 Discussion of the Central California Coast Steelhead (*Oncorhynchus mykiss irideus*)

3.4.3.3.1 *Status*

The Central California Coast Steelhead (CCCS), a type of rainbow trout, is federally listed as a threatened species. Blucher Creek is identified as occupied by CCCS and as critical habitat.

3.4.3.3.2 *Natural History*

Steelhead rainbow trout were once abundant in California's coastal and Central Valley rivers and streams but their numbers are declining. Their range within the Russian River watershed extends throughout the main stem of the Russian River within Sonoma County and into Mendocino County and most of its tributaries.

3.4.3.3.3 *Survey Results*

In a 2002 determination, Blucher Creek was thought to be seasonally occupied by CCCS. Biologists conducted reconnaissance-level field surveys of the creeks in July 2005. During this survey it was determined that only juvenile refuge/rearing habitat is found within the ESL and no suitable spawning habitat occurs within the ESL.

3.4.3.3.4 *Impacts*

The proposed project would adversely impact, but not likely jeopardize, the CCCS or its habitat. If juvenile steelhead are present during construction activities they would be potentially impacted during widening of the existing RCB culverts at Jersey Creek and Blucher Creek. Approximately .009 hectares (.023 acres) of open water habitat would be permanently lost at the four perennial

creeks within the ESL during construction of the proposed project. Approximately 0.02 hectares (0.05 acres) of open-water habitat would be temporarily impacted during construction activities.

Removal and losses of riparian vegetation and canopy during construction would adversely affect water temperature and indirectly impact juvenile steelhead and their habitats within the ESL and areas downstream. Approximately 0.14 ha (0.36 acres) of riparian vegetation would be permanently lost and 0.16 hectares (0.39 acres) would be temporarily lost at Blucher Creek. Disturbances of riparian habitat at the other three creeks would total less than approximately 0.13 hectares (0.32 acres) within each creek.

3.4.3.3.5 Minimization, Avoidance and/or Mitigation Measures

The project design of a clear-span bridge at Blucher Creek, the only creek within project limits with critical habitat, coupled with implementation of standard minimization measures and best management practices, will provide the necessary protection to avoid any impacts to Critical Habitat.

3.4.3.4 Discussion of Endangered Plants of the Santa Rosa Plain (Sonoma Sunshine, Burke's Goldfields, Sebastopol Meadowfoam, and Many-flowered Navarretia) and Lobb's Aquatic Buttercup

3.4.3.4.1 Status

Four federally-listed plants are known to occur in the Santa Rosa Plain Conservation Area, in which a portion of the project area is located. The four plants, all listed as endangered, are Burke's goldfields (*Lasthenia burkei*), Sonoma sunshine (*Blennosperma bakeri*), Sebastopol meadowfoam (*Limnanthes vinculans*), and many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*). Also, Lobb's Aquatic Buttercup (*Ranunculus lobbii*) is listed by the California Native Plant Society as a species of limited distribution.

3.4.3.4.2 Natural History

Sonoma Sunshine or Baker's Stickyseed is an annual herb with pale yellow daisy-like flower heads in the sunflower family (Asteraceae). It is endemic to vernal pools and vernal swales in the Santa Rosa Plain.

Burke's Goldfields is an annual herb with bright yellow daisy-like heads in the sunflower family (Asteraceae). It is found in vernal pools and swales. Its historic distribution includes parts of Sonoma, Lake and Mendocino counties.

Many-flowered Navarretia is a low-growing, light-blue to white-flowered annual herb in the phlox family (Polemoniaceae). It is known mainly from vernal pools of volcanic ash flow vernal pool systems. Its historic range includes locations in Lake and Sonoma Counties.

There are no documented records of the preceding plant species from any of the parcels within the project area or from any parcels immediately adjacent to those of the project area.

Sebastopol Meadowfoam is a white-flowered annual herb in the false-mermaid family (Limnanthaceae). It grows in vernal pools and swales in the Santa Rosa Plain (Cotati Valley), the Petaluma Valley, and Knights Valley in Sonoma County. Several historic locations for Sebastopol meadowfoam are known from the near vicinity of the project area. No suitable habitat for Sebastopol meadowfoam was found within the project area.

Lobb's Aquatic Buttercup is a white-flowering floating or submerged plant found in shallow water such as vernal pools or seasonal wetlands, in oak woodland, mixed-evergreen, or redwood forest habitat. Lobb's Aquatic Buttercup was found during recent project surveys in the project area. Habitat for this species within the ESL includes seasonal wetlands and roadside ditches.

3.4.3.4.2 Survey Results

USFWS protocol level botanical surveys were conducted in the project area in 2005 and 2006. Although no federally-listed species were found in the ESL, suitable habitat that could support federally-listed plant species was identified during 2005 and 2006 botanical surveys. Because a few parcels were inaccessible during the 2005 botanical surveys, the two-year survey protocol was not completed for all parcels, and it cannot be stated conclusively that listed plants are not present on site. It is unlikely, but not impossible, that the above-mentioned federally-listed special-status plants exist within the one area of currently suitable habitat that will be directly affected in the area of effect.

3.4.3.4.3 Impacts

The proposed project is likely to adversely affect endangered plants and/or their habitat. Possible direct effects that may result from implementation of the proposed project include dredging, filling, or topographic alteration of currently suitable or restorable habitat for the listed plant species. Approximately 0.02 hectares (0.05 acres) of currently suitable and restorable habitat may be directly affected by the project. Possible indirect effects that may occur without the proposed protective measures as a result of the proposed construction include hydrologic modifications outside of the habitat that may affect habitat downstream or effects that may alter part of the habitat area itself. No effects from this project are foreseen beyond the project area.

3.4.3.5 Avoidance, Minimization and/or Mitigation Measures

To minimize any adverse effects to the currently suitable and restorable habitat, standard measures for vernal pool species in the Santa Rosa Plain established by USFWS and the USACE, including ESA fencing, restrictions on construction access and staging, and erosion controls, will all be applied.

3.4.3.5 Migratory Birds and Protected Bird Species

3.4.3.5.1 Regulatory Setting

The Federal Migratory Bird Treaty Act (16 USC 703 et seq.), Title 50 Code of Federal Regulations part 10, and California Department of Fish and Game Code Sections 3503, 3513, and 3800, protect migratory birds, their occupied nests, and their eggs. The Federal and California Endangered Species Acts protect occupied and unoccupied nests of some threatened and endangered bird species. The Bald Eagle Protection Act (16 USC 668) prohibits the destruction of bald and golden eagles occupied and unoccupied nests.

3.4.3.5.2 Affected Environment

Migratory birds may nest in the vicinity of the project, and in trees which would be removed in the course of the project.

3.4.3.5.3 Impacts

Migratory birds may potentially be harmed by construction activities during the birds' nesting period. Nesting occurs between, but is not limited to, February 15 and September 1.

3.4.3.5.4 Avoidance, Minimization and/or Mitigation Measures

During the nesting period, Caltrans will implement provisions which may include exclusionary devices to prevent nesting. Where there are occupied migratory bird nests within the project limits, or when birds are discovered to be negatively impacted by construction activities, Caltrans would halt work within 10 meters (33 feet) of the nest and not resume until the birds are no longer occupying nests.

Pre-construction surveys will be conducted to ensure no nesting birds are present prior to the onset of construction activities.

A no-disturbance buffer will be established around active nests within project limits. The size of the buffer will be determined on a case by case basis by a wildlife biologist. Active nests will be avoided until juvenile birds have fledged.

3.5 HYDROLOGY AND FLOODPLAIN

3.5.1 Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration requirements for compliance are outlined in 23 CFR 650 Subpart A.

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

The base floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the base floodplain.”

3.5.2 Affected Environment

In March 2007, Caltrans prepared a Floodplain Assessment and a Floodplain Evaluation Summary Report. The 100-year base floodplain within the project limits is characterized by overflows from Laguna de Santa Rosa. The only encroachment on base floodplains shown on FEMA Flood Insurance Rate Maps is the existing culvert across SR-116 at Blucher Creek.

3.5.3 Impacts

The project would remove this culvert and replace it with a clear-span bridge, which would have no impacts on the floodplain.

3.5.4 Avoidance, Minimization and/or Mitigation Measures

None proposed.

3.6 AIR QUALITY

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), lead (Pb), and sulfur dioxide (SO₂).

Under the 1990 Clean Air Act Amendments, the US Department of Transportation cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of the Clean Air Act requirements.

Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTP) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as Metropolitan Planning Commission for the greater San Francisco Bay Area, and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter. A region is a “nonattainment” area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA and CEQA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in “nonattainment” areas the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

The Caltrans Office of Environmental Engineering made the determination that the proposed project is exempt from regional (40 CFR 93.127-128)] conformity requirements. Separate listing of the project in the Regional Transportation Plan and Transportation Improvement Program, and their regional conformity analyses, is not necessary. The project will not interfere with timely implementation of Transportation Control Measures identified in the applicable SIP and regional conformity analysis. The project is neither growth inducing nor capacity increasing, and would have no impact on the production of greenhouse gasses.